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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/650,397	08/28/2003	Brian Mitchell Bass	RAL919990139US2	6767

25299 7590 09/29/2004

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EXAMINER	
LY, ANH	

ART UNIT	PAPER NUMBER
2172	

DATE MAILED: 09/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/650,397	BASS ET AL.	
	Examiner	Art Unit	
	Anh Ly	2172	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08/28/2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-45* is/are pending in the application.

4a) Of the above claim(s) *1-13 and 24-45* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/28/03, 10/20/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is response to Applicants' Preliminary Amendment filed on 08/23/2003.

2. Claims 1-13 and 24-45 are cancelled.

3. Claims 14-23 are pending in this application.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 14-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,396,842 issued to Rochberger in view of US Patent No. 6,553,002 issued to Bremer et al. (hereinafter Bremer).

With respect to claim 1, Rochberger teaches a computer readable medium containing a plurality of data structures for finding a full match for a variable length search key (a full match search to be used to search the key (col. 6, lines 15-20) comprising: a pattern or key that is to be searched (using Patricia search tree algorithm to search the key, the length of the address in the network process as pattern or key to be search: col. 8, lines 64-67 and col. 9, lines 1-8).

Rochberger teaches a method that based on Patricia search algorithm for searching utilizing a longest match Radix Search trie with variable length keys and having the ability to handle keys being prefixes of other keys (see figs. 7 and 8 and abstract). Rochberger also teaches a table as shown in fig. 10 containing destination addresses or keys, address length and original address prefix and length (co. 14, lines 6-20). Rochberger does not clearly teach a direct table that stores a first address location for a search tree, a plurality of pattern search control blocks that each represent a branch in the search tree, and a plurality of leaves wherein each leaf is an address location for the result of a search.

However, Bremer teaches routing table containing the address location to be searched (col. 2, lines 36-42 and lines 56-65); data packet having a plurality of header

portions and each data packet has a destination address as pattern key search control block (col. 6, line 30-35 and lines 52-65, see fig. 5) and in traversing the search tree having branches determines the right or left node from the branch in the search tree (see figs. 6-7, col. 8, lines 1-15) and a plurality of leaves of the search tree containing address location for the search and the destination address is also is a search key in the search (col. 7, lines 8-22 and col. col. 2, lines 56-67 and col. 3, lines 1-10).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Rochberger with the teachings of Bremer by incorporating the user of routing table containing address location for a search tree, portions of data packet having the destination address and the leaves of a search tree containing address location for search. The motivation being to have a full match search to find the destination address with variable length search keys storing on the search tree with a plurality of braches for search control blocks and having the ability to handle keys being prefixes of other keys.

With respect to claim 15, Rochberger teaches a computer-readable medium as discussed in claim 14.

Rochberger teaches a method that based on Patricia search algorithm for searching utilizing a longest match Radix Search trie with variable length keys and having the ability to handle keys being prefixes of other keys (see figs. 7 and 8 and abstract). Rochberger also teaches a table as shown in fig. 10 containing destination addresses or keys, address length and original address prefix and length (co. 14, lines

6-20). Rochberger does not clearly teach a lookup definition table that manages a tree search memory.

However, Bremer teaches routing table having look-up process for controlling the memory overflow (col. 1, lines 48-58 and col. 4, lines 46-50).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Rochberger with the teachings of Bremer by incorporating the user of routing table having look-up process for controlling the memory in the tree search memory and the routing lookup table containing address location for a search tree, portions of data packet having the destination address and the leaves of a search tree containing address location for search. The motivation being to have a full match search to find the destination address with variable length search keys storing on the search tree with a plurality of braches for search control blocks and having the ability to handle keys being prefixes of other keys.

With respect to claims 16-17, Rochberger teaches a computer-readable medium as discussed in claim 14.

Rochberger teaches a method that based on Patricia search algorithm for searching utilizing a longest match Radix Search trie with variable length keys and having the ability to handle keys being prefixes of other keys (see figs. 7 and 8 and abstract). Rochberger also teaches a table as shown in fig. 10 containing destination addresses or keys, address length and original address prefix and length (co. 14, lines 6-20). Rochberger does not clearly teach the lookup definition table comprises entries that define a physical memory that the tree resides in, a size of the key and leaf, and a

type of search to be performed, the lookup definition table is implemented in a plurality of memories.

However, Bremer teaches routing table having look-up process containing address location to be search on the search key with a variable length search key and a plurality of leaves having the address locations and the branches for the type of search to the right or the left of the search tree (col. 6, line 30-35 and lines 52-65, see fig. 5; see figs. 6-7, col. 8, lines 1-15).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Rochberger with the teachings of Bremer by incorporating the user of routing table having look-up process for controlling the memory in the tree search memory and the routing lookup table containing address location for a search tree, portions of data packet having the destination address and the leaves of a search tree containing address location for search. The motivation being to have a full match search to find the destination address with variable length search keys storing on the search tree with a plurality of braches for search control blocks and having the ability to handle keys being prefixes of other keys.

With respect to claims 18-19, Rochberger teaches a computer-readable medium as discussed in claim 14.

Rochberger teaches a method that based on Patricia search algorithm for searching utilizing a longest match Radix Search trie with variable length keys and having the ability to handle keys being prefixes of other keys (see figs. 7 and 8 and abstract). Rochberger also teaches a table as shown in fig. 10 containing destination

addresses or keys, address length and original address prefix and length (co. 14, lines 6-20). Rochberger does not clearly teach wherein a format for a direct table entry includes at least one of a search control block; a next pattern address that point to a next pattern search control block; a leaf control block address that points to a leaf or result; a next bit or bits to test; and a direct leaf, a format for a pattern search control block includes at least one of a search control block; a next pattern address that point to a next pattern search control block; a leaf control block address that points to a leaf or result; and a next bit or bits to test.

However, Bremer teaches leaves of the search tree and address location or destination address as a search key and decision bit for parent or child node in the search tree and routing table having look-up process containing address location to be search on the search key with a variable length search key and a plurality of leaves having the address locations and the branches for the type of search to the right or the left of the search tree (col. 6, line 30-35 and lines 52-65, see fig. 5; see figs. 6-7, col. 8, lines 1-15; see abstract and col. 7, lines 30-44 and col. 8, lines 1-15 and lines 16-26).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Rochberger with the teachings of Bremer by incorporating the user of routing table having look-up process for controlling the memory in the tree search memory and the routing lookup table containing address location for a search tree, portions of data packet having the destination address and the leaves of a search tree containing address location for search. The motivation being to have a full match search to find the destination address

with variable length search keys storing on the search tree with a plurality of braches for search control blocks and having the ability to handle keys being prefixes of other keys.

With respect to claims 20-23, Rochberger teaches a computer-readable medium as discussed in claim 14. Also Rochberger teaches inserting the nodes into the tree (col. 7, lines 38-42).

Rochberger teaches a method that based on Patricia search algorithm for searching utilizing a longest match Radix Search trie with variable length keys and having the ability to handle keys being prefixes of other keys (see figs. 7 and 8 and abstract). Rochberger also teaches a table as shown in fig. 10 containing destination addresses or keys, address length and original address prefix and length (co. 14, lines 6-20). Rochberger does not clearly teach a leaf data structure includes at least one of a leaf chaining pointer, a prefix length, a pattern to be compared to the search key, and variable user data, the direct leaf is stored directly in a direct table entry and includes a search control block and a pattern to be compared to a search key, a pattern search control block is inserted in the search tree at a position where the leaf patterns differ, and a pattern search control block has a shape defined by a width of one and a height of one and is stored in a memory that has a line length of at least 36 bits.

However, Bremer teaches leaves of the search tree and address location or destination address as a search key, comparing the search key and a best route match (col. 12, lines 50-67) and the address filed containing the address of the data packet from 32 –bits to 128 bits in length (col. 6, lines 40-50) and decision bit for parent or child node in the search tree and routing table having look-up process containing address

location to be search on the search key with a variable length search key and a plurality of leaves having the address locations and the branches for the type of search to the right or the left of the search tree (col. 6, line 30-35 and lines 52-65, see fig. 5; see figs. 6-7, col. 8, lines 1-15; see abstract and col. 7, lines 30-44 and col. 8, lines 1-15 and lines 16-26).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Rochberger with the teachings of Bremer by incorporating the user of routing table having look-up process for controlling the memory in the tree search memory and the routing lookup table containing address location for a search tree, portions of data packet having the destination address and the leaves of a search tree containing address location for search. The motivation being to have a full match search to find the destination address with variable length search keys storing on the search tree with a plurality of braches for search control blocks and having the ability to handle keys being prefixes of other keys.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh Ly whose telephone number is 703 306-4527 or via E-Mail: ANH.LY@USPTO.GOV. The examiner can normally be reached on 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene, can be reached on 703 305-9790. The fax phone number for the organization where this application or proceeding is assigned is 703 746-7239.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to: Central Fax Center (703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Fourth Floor (receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-6606 or 703 305-3900.

JEAN M. CORRIELUS
PRIMARY EXAMINER

ANH LY
SEP 22nd, 2004.